

What Is Claimed Is:

1. An acceleration and displacement sensor comprising:

a) a position signal generator having a plurality of sensing terminals aligned to one another in axial direction, the sensing terminal each representing a certain position signal value;

b) a rolling ball movable within a closed space defined by the position signal generator;

c) a signal-detecting and arithmetic unit for receiving and calculating the position signal value of the sensing terminal where the rolling ball is located; and

d) a power supply unit connected to the signal-detecting and arithmetic unit, whereby, when the rolling ball is forced to move in axial direction, the signal-detecting and arithmetic unit can calculate different position signal values and obtain their change during a certain time period, thereby determining the displacement distance and the acceleration value.

2. The acceleration and displacement sensor of claim 1 further comprising an expansion spring attached to the rolling ball so that the rolling ball is movable by an external force while it, after being released, returns to its original position whose signal value is null.

3. The acceleration and displacement sensor of claim 1 further comprising a frame around the rolling ball so that the rolling ball is movably received within the frame.